

Title (en)

Semi-conductor optical amplifier with short switching time.

Title (de)

Optischer Halbleiterverstärker mit kurzer Schaltzeit.

Title (fr)

Amplificateur optique à semiconducteur à faible temps de commutation.

Publication

**EP 0554178 A1 19930804 (FR)**

Application

**EP 93400210 A 19930128**

Priority

FR 9201083 A 19920131

Abstract (en)

[origin: JPH05275807A] PURPOSE: To achieve short switching times, without the need of high excitation and limiting operation temperature range by generating a laser effect with a wavelength corresponding to a deep quantum well, and amplifying light with a wavelength corresponding to a shallow quantum well. CONSTITUTION: A shallow and narrow quantum well P1 is formed on a first layer 12, and a deep and wide quantum well P2 which is continuously connected with the well P1 is formed on a third layer 16, on the opposite side of a potential barrier BP corresponding to a second layer 14. An optical amplifier has two transmission material layers. An antireflection layer for preventing the reflection of a wavelength  $\lambda_1$ , corresponding to the energy of a forbidden band Eg1 in a first semiconductor forming the transmission material layers and the shallow, and narrow quantum well P1 is constituted. A partial reflecting layer for reflecting a wavelength  $\lambda_2$ , corresponding to the energy of a forbidden band Eg3 in a third semiconductor forming the deep and wide quantum well P2 is constituted. Light amplification is generated at the wavelength  $\lambda_1$ , corresponding to the shallow and narrow quantum well P1, and laser oscillation effect is generated at the wavelength  $\lambda_2$ .

Abstract (fr)

L'amplificateur de l'invention comprend un puits peu profond et étroit (P1) où a lieu l'amplification et un puits profond et large (P2) chargé de recueillir les porteurs après cessation de l'excitation, ce puits étant vidé par effet laser. Application en télécommunications optiques. <IMAGE>

IPC 1-7

**H01L 33/00**; **H01S 3/19**; **H01S 3/25**

IPC 8 full level

**H01S 5/00** (2006.01); **H01L 33/06** (2010.01); **H01S 5/50** (2006.01); **H01S 5/34** (2006.01)

CPC (source: EP US)

**B82Y 20/00** (2013.01 - EP US); **H01L 33/06** (2013.01 - EP US); **H01S 5/50** (2013.01 - EP US); **H01S 5/3418** (2013.01 - EP US); **H01S 5/3428** (2013.01 - EP US)

Citation (search report)

- [A] EP 0280281 A2 19880831 - CANON KK [JP]
- [A] US 4745452 A 19880517 - SOLLNER T C L GERHARD [US]
- [A] EP 0390167 A2 19901003 - CANON KK [JP]
- [XP] EP 0483687 A2 19920506 - CANON KK [JP]
- [A] APPLIED PHYSICS LETTERS. vol. 59, no. 5, 29 Juillet 1991, NEW YORK US pages 504 - 506 S. IKEDA ET AL. 'Evidence of the wavelength switching caused by a blocked carrier transport in an asymmetric dual quantum well laser'
- [A] APPLIED PHYSICS LETTERS. vol. 55, no. 12, 18 Septembre 1989, NEW YORK US pages 1155 - 1157 S. IKEDA ET AL. 'Asymmetric dual quantum well laser-wavelength switching controlled by injection current'

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**EP 0554178 A1 19930804**; **EP 0554178 B1 19970723**; DE 69312339 D1 19970904; DE 69312339 T2 19980129; FR 2687011 A1 19930806; FR 2687011 B1 19940708; JP 3215531 B2 20011009; JP H05275807 A 19931022; US 5283688 A 19940201

DOCDB simple family (application)

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